

13. ON CARP FRY MORTALITY DUE TO
CYCLOPS ATTACK

During experiments on rearing carp fry in the laboratory, an interesting case of heavy mortality of early fry due to the attack of cyclops was observed. Alikunhi (1952) indicated the role of zooplankton in general on the survival and growth of carp fry, Wilson (1914) observed that *Daphnia pulex* causes mortality of developing fry, and damage to fry (not mortality) by *Mesocyclops edax* is reported by Davis (1959). The present note which describes the extent of damage to and mortality of fry caused by *Mesocyclops* sp. is of particular interest to fish culturists since it is a well-established practice among them to provide the fish fry with abundant supply of their most preferred food, the zooplankton, so as to obtain the best returns.

In the first experiment, ten fry, 5 to 7 mm. in length, were kept in a large petri dish and about 200 cyclops were introduced as food. Within 3 minutes, one fry was fatally wounded and the attacking cyclops was seen firmly attached to the latero-ventral part of the head region of the fry. Even before the dying fry settled at the bottom, a host of other cyclops joined and commenced devouring it. Attack on the other fry followed in quick succession and in a brief period of less than 4 hours, all the ten specimens were killed and eaten leaving only the skeletal parts.

Subsequent observations indicated that percentage of fry mortality is dependent upon the density of cyclops present in the environment. 100 fry, 5 to 7 mm. long, were introduced in a glass aquarium containing 3 litres of water and 0.5 cc. of cyclops were added. Within 1 to 2 minutes, the attack on carp fry commenced and the first mortality occurred within 10 minutes. During the first 30 minutes, 10 fry were killed, followed by another 15 within 2½ hours, thereby causing 25 per cent mortality within 3 hours. But during the succeeding hours, rate of mortality was much less and total of 27 per cent were killed in 24 hours.

A close examination of the mode of attack resulting in mortality of fry and the manner in which cyclops fed on the injured fry clearly showed that the phenomenon is not accidental but is a deliberate activity of cyclops.

Though the concentration of cyclops introduced in the experimental aquaria was very much higher than what is normally found in nursery ponds it is very clear that under favourable conditions *Mesocyclops* causes mortality of carp fry. Predominance of cyclops in nursery ponds could therefore be one of the contributory factors

for heavy mortality of fry in them. Some of the other factors, according to Alikunhi (1957) are lack of proper food, presence of predatory insects and fishes and adverse physico-chemical elements of water.

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KRISHNA-GODAVARI SURVEY UNIT,
CENTRAL INLAND FISHERIES,
RAJAHMUNDRY, (A.P.),
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M. A. V. LAKSHMANAN¹

14. A NOTE ON THE BREEDING OF *LABEO GONIUS* (HAM.) AT JHANSI (U.P.) IN 1954

With a view to elucidate factors responsible for the breeding of Indian carps in their natural habitat, an investigation was undertaken at Baretaghat nala in the vicinity of River Betwa, a tributary of River Jumna, near Jhansi, for a period of about seven weeks from 1.vii.1954 to 18.viii.1954. During the course of this investigation, a breeding ground of *Labeo gonius* (Ham.) was located in the grassy fields adjacent to Baretaghat nala, about half mile from River Betwa, at 15.00 hours of July 11, 1954. Millions of fertilized carp eggs, later identified as those of *Labeo gonius*, were found scattered over an area of about 30×12 ft. and 1-2 in. deep still water with grassy patches exposed here and there. Majority of the collected eggs hatched out at about 22.00 hours on the day of collection and from data recorded by earlier authors, on the incubation period of *Labeo gonius*, it is presumed that the fish bred during the early hours of the morning of July 11, 1954.

Till the afternoon of July 10, 1954, the nala was completely dry. Towards the evening of that day, there was an abrupt rise in the water level of the River Betwa by 10 feet as a result of which water rushed from the river into the nala flooding the adjoining fields. About this time heavy rain fall occurred at Baretaghat, bringing in torrents of water into the nala from its upper reaches as well as

¹ Present address : Central Inland Fisheries Research Sub-Station, 19, Cantonment Road, Cuttack, Orissa.